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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/840,082	04/24/2001	Joo Soo Lim	049128-5006	2174
9629 7590 12/03/2007 MORGAN LEWIS & BOCKIUS LLP 1111 PENNSYLVANIA AVENUE NW WASHINGTON, DC 20004			EXAMINER QI, ZHI QIANG	
			ART UNIT 2871	PAPER NUMBER
			MAIL DATE 12/03/2007	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

**Application No.**

09/840,082

**Applicant(s)**

LIM ET AL.

**Examiner**

Mike Qi

**Art Unit**

2871

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-3,9,11-13,19,21,23 and 24 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 24 is/are allowed.
- 6) ☒ Claim(s) 1-3,9,11-13,19,21 and 23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 31, 2007 has been entered.

### ***Claim Objections***

1. Claims 1, 9, 11 and 19 are objected to because of the following informalities:

In claims 1, 9, 11 and 19, the limitation "a third light shielding member overlapping the pixel electrode at a region adjacent to the data line" is not described in the specification. Actually, according to the Fig.4 of this application, the light shielding member is a black matrix (31) has a boundary portion adjacent to the data line and overlapping the pixel electrode. For examination purpose it is interpreted as a boundary portion of the light shielding member adjacent to the data line and overlapping the pixel electrode.

Appropriate correction is required.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-3, 9, 11-13, 19 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,297,862 (Murade) in view of US 5,339,181 (Kim et al).

Regarding claims 1, 9, 11, 19 and 23, in the "Decision on Appeal" dated August 25, 2006, the Board stated that "Murade considered alone amply establish a prima facie case of obviousness (see page 8, lines 1-2), and the reference Kim is an evidence as set forth below.

**Murade** teaches (col.7, line 11 – col.9, line 67; Figs.1 and 2) liquid crystal display comprising:

- a pixel electrode (6) at a pixel area between a gate line (2) and data line (3);
- a switching device (thin film transistor TFT) at an intersection between the gate line (2) and the data line (3), and having drain electrode (1b) connected to the pixel electrode (14) (see Fig.2) as a first metal film ;
- a light-shielding member (black matrix) (6) in which a portion as a first light-shielding member covering the switching device (TFT) and also on the first metal film (the drain electrode (1b);
- a charging device (a storage capacitor between the gate line 2 as the lower electrode and the date line 3 as the upper electrode or a second metal film overlapping the pixel electrode 14 ) on the gate line (2), therefore, the charging device is a storage capacitor including the upper electrode (metal) (a second metal film overlapping the pixel electrode) and the gate line (2) and

- a gate insulating layer (such as insulating film 13) (dielectric layer) between the gate line (2) and the upper electrode ; or forming a charging device including upper electrode made of metal (second metal film on the rear substrate and overlapping the pixel electrode) over the gate line (2) and a dielectric layer (such as insulating film 13);
- a light-shielding member (black matrix) (6) a portion covering the drain electrode (1b) of the switching device (TFT) (the first metal thin film) functions as the first light-shielding member or the first dummy black matrix;
  - a light-shielding member (black matrix) (6) in which ha portion covering the charging device (the storage capacitor) also functions as the second light-shielding member or the second dummy black matrix;

(concerning claims 1, 9, 19 and 23)

- drain electrode (1b) (first metal thin film) connected to the pixel electrode (14) (see Fig.2);
- upper electrode (such as the data line 3) (second metal thin film) on the gate line (2) and a gate insulating layer (such as insulating film 13) (dielectric layer) forming a charging device (capacitor) and overlapping the pixel electrode (14);
- a light-shielding member (black matrix) (6) on a front substrate (31) opposed to the rear substrate (10), and at a boundary portion between pixel areas (see Figs.1 and 2);

- a light-shielding member (black matrix) (6) for blocking light incident onto the drain electrode (1b) (first metal thin film) of the switching device (TFT) and for blocking light incident onto the storage capacitor upper electrode (second metal thin film).

**Murade** further teaches (col.7, line 11 – col.9, line 67; col.16, line 43 – col.17, line 53; Figs.1, 2, 11-14, 20) that the shielding film (black matrix 6) is formed around the pixel, and the shielding film (black matrix 6) completely covering the switching device (TFT, such as the source/drain regions 1a and 1b as shown in Figs. 1 and 2) and extending from the drain region into the pixel area, and the light shielding member (black matrix 6) completely covering and extending over the drain/source region, and the light shielding member (black matrix 6) also extending over the upper electrode of a storage capacitor (any two conductive layers and an insulating layer would constitute a capacitor) such as the data line (3) made of metal (aluminum) (see col.7, lines 28-29) and gate line (2) (or there is a metal film 7) and insulating film (13, 12, 11) that constitutes a capacitance (charging device or storage capacitor) ( see Fig.2), and the boundary portion of the light shielding member (6) adjacent to the data line and overlapping the pixel electrode, such that is sufficient to block light incident onto the drain/source region (the metal thin film), and the light incident on the liquid crystal device. Accordingly, even when light is intensified and such intensified light is incident on the liquid crystal device, it does not affect the TFT performance, and a bright, high quality images will be ensured (see col.6, lines 4-6).

Since such light-shielding arrangement would sufficiently block the light incident to the TFT, so as to minimize the leakage current of the TFT. **Murade** indicates (col.9, lines 58 –67) that such black matrix (6) as shown in Fig.2 completely covering (overlapping and extending) the TFT including the drain electrode and storage capacitance and the side portion (boundary portion adjacent to the data line) of the pixel electrode would present a display of high quality images free from image degrading effect such as cross-talk.

Further, as evidence, **Kim** teaches (col.3, line 40 – col.5, line 25; Fig.2A) that a liquid crystal display device having a first electrode (10) of each storage capacitor C (as the second metal film of this application), the gate line (1) and the insulating layer (2) forming a storage capacitor C; and the black matrix light shielding layer (20) completely covering the switching device (TFT) and extending from ends of the drain/source electrode (5a, 5b) (as first metal film of this application) into the pixel area (4) as shown in Fig.2A and 2B; and the black matrix light shielding layer (20) on the electrode (10) (as the second metal film of this application) completely covering the storage capacitor C and extending from ends of the electrode (10) (as the second metal film of this application), and the storage capacitor C overlapping the pixel electrode (4) as shown in Fig.2A and 2B. **Kim** further teaches (col.5, lines 9-14) that the electrode (10) of each storage capacitor C substantially surrounding each pixel electrode (including boundary portion adjacent to the data lines) so as to serve as an additional light shielding layer, such that the light shielding structure (completely covering the TFT and the storage capacitor) provides a margin sufficient

to block light incident onto the TFT and the storage capacitor, and that would have been at least obvious.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Murade with the teachings of extending the light-shielding film completely covering the thin film transistor and completely covering the storage capacitor as taught by Murade and Kim, since the skilled in the art would be motivated for minimizing the leakage current of the TFT, improving the display contrast, and presenting a display of high quality images free from image degrading effect such as cross-talk so as to provide a margin sufficient to block light incident onto the TFT and the storage capacitor.

Regarding claims 2 and 12, Murade further teaches (col.7, line 11 – col.9, line 67; Figs.1 and 2) that the light-shielding member (6) is at a front substrate (31) opposed to a rear substrate (10) which includes the switching device (TFT), pixel electrode (14), the charging device (storage capacitor, and a liquid crystal layer between the two substrates.

Regarding claims 3 and 13, Murade further teaches (col.7, line 11 – col.9, line 67; Figs.1 and 2) that the light-shielding member is a black matrix.

4. Claim 21 is rejected under 35 U.S.C. 103(a) as being unpatentable over Murade and Kim as applied to claims 1-3, 9, 11-13, 19 and 23 above, and further in view of US 6,266,117 (Yanagawa et al).

Regarding claim 21, Murade and Kim teach the invention set forth above



except for that the material of the light-shielding member is an organic material containing a black pigment,

Yanagawa teaches (co.7, lines 1-2) that the light shielding film is made of an organic resin in which, e.g., black pigment is dispersed, so that using the organic resin containing a black pigment as a light shielding member would be a routine skill in the art, and that was common and known in the art as the light shielding property of the organic material containing a black pigment to absorb light.

Therefore, it would have been obvious to those skilled in the art at the time the invention was made to modify the liquid crystal display device of Murade and Kim with the teachings of using an organic material containing a black pigment to form a light shielding member as taught by Yanagawa, since the skilled in the art would be motivated for absorbing light because the organic material containing a black pigment having the property to absorb light.

***Allowable Subject Matter***

5. Claim 24 is allowed.

6. The following is a statement of reasons for the indication of allowable subject matter:

Claim 24 is allowable because the prior art of record neither anticipated nor rendered obvious that a liquid crystal display panel comprises various elements as claimed with specific features recited in claim 24 as follow:

a second metal thin film (upper electrode of the storage capacitor) over the adjacent one of the gate lines and overlapping the pixel electrode to define a storage capacitor, the second metal thin film extended into the pixel area with a width in the first direction (horizontal direction) less than a separation between the one of the data lines and the adjacent one of the data lines so that the second metal thin film is separated with respect to the first direction from the one of the data lines and the adjacent one of the data lines; and a second light shielding member extended from the black matrix into the pixel area to completely cover the second metal thin film (upper electrode of the storage capacitor), the second light shielding member having a width in the first direction (horizontal direction) greater than of the second metal thin film but less than a separation between the one of the data lines and the adjacent one of the data lines so that the second light shielding member is separated with respect to the first direction from the one of the data lines and the adjacent one of the data lines as shown in Fig.4.

### ***Response to Arguments***

7. Applicant's arguments with respect to claims 1-3, 9, 11-13, 19, 21 and 23 have been considered but are moot in view of the new ground(s) of rejection.

According to the "Decision on Appeal" dated on August 25, 2006, the Board stated that the examiner reliance on the admitted prior art device to establish a prima facie case of obviousness is merely cumulative to the teachings of Murade (see page 8, lines 2-4). Therefore, the previous rejection for the claims 1-3, 9, 11-13, 15-17 and 19 is proper.

The reference Murade teaches (col.9, lines 58 –67) that such black matrix (6) as shown in Fig.2 completely covering (overlapping and extending) the TFT including the drain electrode and storage capacitance and the side portion (boundary portion adjacent to the data line) of the pixel electrode would present a display of high quality images free from image degrading effect such as cross-talk. Therefore, the skilled in the art would be benefited from such motivation to achieve such light shielding structure as claimed.

### ***Conclusion***

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Mike Qi whose telephone number is (571) 272-2299. The examiner can normally be reached on M-T 7:30 am-6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on (571) 272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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*Zab*

Mike Qi  
Primary examiner  
Nov. 28, 2007